SONY

CAMERA ADAPTOR

CA-D50

SERVICE MANUAL

Volume 1 1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the service manual volume 1 of Camera Adaptor CA-D50.
This manual is intended for use by trained system and service engineers, and is provided information that is maintenance information and the information for service such as replacement of boards.

Related manuals

Besides this service manual volume 1, the following manuals are available.

- **Operating Instructions (Supplied with this unit)**
  This manual is necessary for the use and the operation of this unit.
  Part No.: 3-206-150-XX

- **CD-ROM Manual (Supplied with this unit)**
  This manual contains the operating instructions of CA-D50 and the Camera Control Unit CCU-D50/D50P.
  Part No.: 3-620-540-XX

- **Service Manual Volume 2 (Available on request)**
  This manual is provided information that is premised the parts level service (exploded views, block diagrams, board layouts, schematic diagrams, detailed parts lists and the like.) for this unit.
  If this manual is required, please contact your local Sony Sales Office/Service Center.
  Part No.: 9-955-366-2X

- **"Semiconductor Pin Assignments" CD-ROM (Available on request)**
  This "Semiconductor Pin Assignments" CD-ROM allows you to search for semiconductors used in Communication B&P Company equipment. Semiconductors that cannot be searched for on this CD-ROM are listed in the service manual for the corresponding unit. The service manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.
  Part number: 9-968-546-XX

Contents

The service manual volume 1 is organized by following sections.

Section 1 Service Overview
Describes the board location on-board switches, fixtures, board replacement, etc.

Section 2 Electrical Alignment
Describes electrical adjustment necessary for maintenance of the unit or replacement of parts.

Section 1
Service Overview

1-1. Check Before System Setup

1-1-1. Connecting with DXC-D35/D35P/ D35WS/D35WSP

When connecting the Color Video Camera DXC-D35/ D35P/D35WS/D35WSP to this unit, be sure to check the ROM version of the color video camera to be connected. If ROM version is lower than the specified below, be sure to replace the ROM of the camera.

Model	Board name	Ref No.	ROM version
DXC-D35/D35P/ D35WS/D35WSP	AT-144	IC102	Ver.1.21 and higher

1-1-2. Connecting with DXC-D30/D30P/ D30WS/D30WSP

When connecting the Color Video Camera DXC-D30/ D30P/D30WS/D30WSP to the unit, be sure to replace the AT board of the color video camera to be connected. If ROM version on the replaced board is lower than the specified below, be sure to replace the ROM of the replaced board.

AT Board

Model	Board name
DXC-D30/D30P	AT-110 → AT-144
DXC-D30WS/D30WSP	AT-125 → AT-144

ROM

Board name	Ref No.	ROM version
AT-144	IC102	Ver.1.21 and higher

Note

When the board is replaced with the AT-144 board, be sure to check the switch S101 settings on the AT-144 board referring to the Service Manual of DXC-D35/D35P/ D35WS/D35WSP.

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

BNC connector

SDI OUT
0.8 V p-p, 75 Ω ±5 %, 270 Mbps

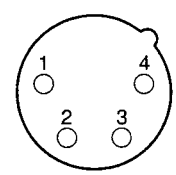
PROMPT/GENLOCK
VBS 1.0 V p-p sync negative, 75 Ω ±5 %

JACK

EARPHONE
0.2 mW (Max. 5 mW, Zi = 8 Ω, 1 kHz)

INTERCOM
MIC IN : −60 dBs (600 Ω)
TALK OUT : Zo = 15 Ω (Headset Zi = 45 Ω, 1 kHz)

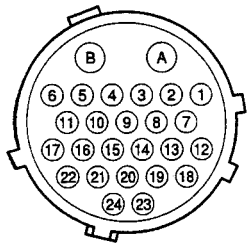
DC IN (4P MALE)



(EXTERNAL VIEW)

No.	Signal	Specifications
1	GND	GND for DC (+)
2	(SPARE)	
3	(SPARE)	
4	DC (+) IN	DC 11.5 to 17.0 V

CCU/VTR/CMA (26P MALE)



(EXTERNAL VIEW)

No.	Signal	Specifications
A	EXT DC (CCZ) IN (X)	10.5 to 17.0 Vdc, 3 A
B	EXT DC IN (G)	GND for EXT DC (CCZ) IN (X)
1 *1	EN VIDEO OUT (X)	VBS = 1.0 V p-p ±10 sync negative Zo = 75 Ω ±5 % DC = 0 ±100 mV
2 *1	EN VIDEO OUT (G)	GND for EN VIDEO OUT (X)
3 *1	G/Y/Y VIDEO OUT (G)	GND for G/Y/Y VIDEO OUT (X)
4 *1	G/Y/Y VIDEO OUT (X)	VS = 1.0 V p-p ±2 % sync negative Zo = 75 Ω ±5 % DC = 0 ±200 mV
5 *1	R/R-Y/C VIDEO OUT (X)	V = 714/700/286 m V p-p (BURST) ±2 % (75 % COLOR BARS) Zo = 75 Ω ±5 % DC = 0 ±200 mV
6 *1	R/R-Y/C VIDEO OUT (G)	GND for R/R-Y/C VIDEO OUT (X)
7 *1	B/B-Y/VBS VIDEO OUT (X)	V = 714/700 mV p-p ±2 % (75 % COLOR BARS) Zo = 75 Ω ±5 % DC = 0 ±200 mV
8 *1	B/B-Y VIDEO OUT (G)	GND for B/B-Y/VBS VIDEO OUT (X)
9	MIC OUT (X)	−20 dBm
10	MIC OUT (Y)	Zo ≦ 600 Ω
11	MIC OUT (G)	BALANCED
12	TALLY IN	Zi ≧ 600 Ω
13 *1	S DATA (CHU) IN/OUT (M5A mode)	Zo ≧ 10 kΩ 0 — 3 ±0.5 V dc / 0.5 ±0.5 V dc
	S DATA OUT (TX7 mode)	Zo ≧ 10 kΩ 3 ±0.5 V dc — 2.5 ±0.5 V / GND
14 *1	(Spare)	
15 *1	(Spare)	
16	GENLOCK IN (G)	GND for GENLOCK IN (X)
17	INCOM IN/OUT (G)	GND for AUDIO MONITOR
18	RET/PB VIDEO IN (X)	VBS = 1.0 V p-p sync negative Zi = 75 Ω ±5 % DC = 0 ±200 mV
19	RET/PB VIDEO IN (G)	GND for RET/PB VIDEO IN (X)
20 *1	AUDIO MONI IN/ S.DATA IN	M5A mode : OPEN TX7mode : 3 ±0.5 V dc — 2.5 ±0.5 V / GND
21	GENLOCK IN (X)	VBS = 1.0 V p-p sync negative Zi = 75 Ω ±5 %
22 *1	(Spare)	
23	INCOM (X)	Zo = 600 Ω
24	INCOM (Y)	

*1 : The input/output signal of this pin varies according to the unit to be connected.

Connecting with CCU-D50/D50P

The output signal varies according to the settings of the system setting switches 4 and 5 of the CCU-D50/D50P in the VBS mode or SDI mode.
For the selection of VBS mode and SDI mode, refer to the Operating Instructions of CCU-D50/D50P.

• In VBS mode (mode in the CCU-D50/D50P)

No.	RGB	Y, R-Y, B-Y	Y/C
1	EN VIDEO OUT (X)	EN VIDEO OUT (X)	EN VIDEO OUT (X)
2	EN VIDEO/CF OUT (G)	EN VIDEO/CF OUT (G)	EN VIDEO/CF OUT (G)
3	G VIDEO OUT (G)	Y VIDEO OUT (G)	Y VIDEO OUT (G)
4	G VIDEO OUT (X)	Y VIDEO OUT (X) *2	Y VIDEO OUT (X) *1
5	R VIDEO OUT (X)	R-Y VIDEO OUT (X)	CHROMA VIDEO OUT (X)
6	R VIDEO OUT (G)	R-Y VIDEO OUT (G)	CHROMA VIDE OUT (G)
7	B VIDEO OUT (X)	B-Y VIDEO OUT (X)	–
8	B VIDEO OUT (G)	B-Y VIDEO OUT (G)	–

*1 : Y/C
*2 : COMPONENT

• In SDI mode (mode in the CCU-D50/D50P)

No.	Signal	Specifications
1	SDI OUT (X)	0.8 V p-p Zi = 75 Ω ±5 %, 270 M bps
2	SDI OUT (G)	GND for SDI OUT (X)
3*	AUX RX (G)	GND for AUX RX (X)
4*	AUX RX (X)	115200 bps
5*	AUX TX (X)	2.5 ±0.5 V p-p
6*	AUX TX (G)	GND for AUX TX (X)
7	EN VIDEO OUT (X)	1.0 V p-p Zi = 75 Ω ±5 %
8	EN VIDEO OUT (G)	GND for EN VIDEO OUT (X)

∗ : Using AUX RS-232C communicating function. (Refer to Section 1-3.)

In connecting with the VTR equipped with SDI signal

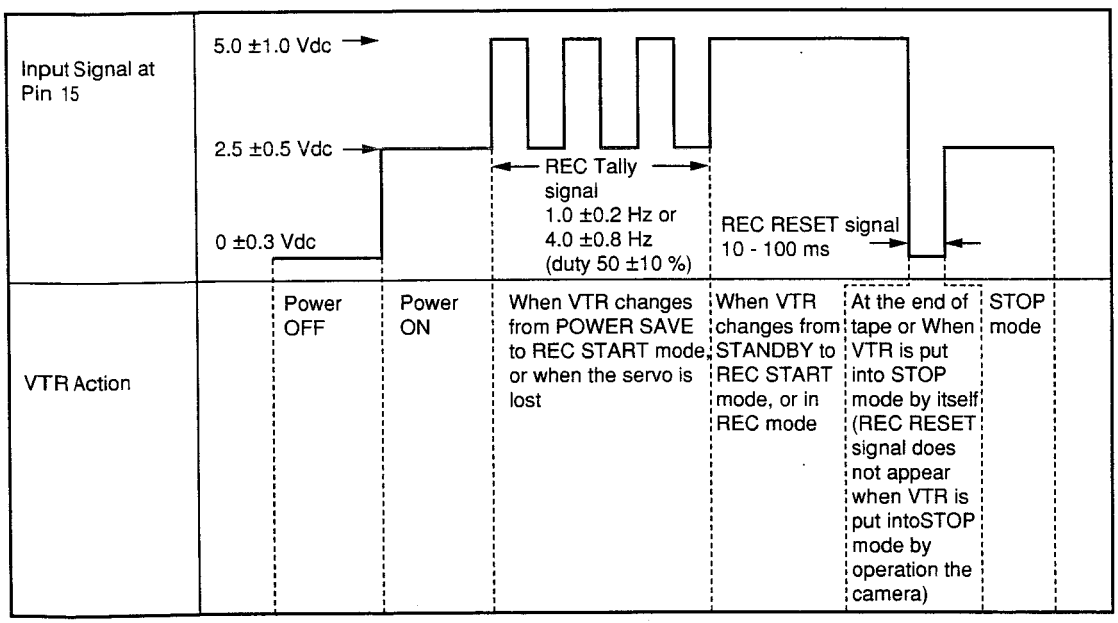
Digital VTR (DVW-250)			Analog VTR (DSR-50)	
No.	**Signal**	**Specifications**	**Signal**	**Specifications**
1	SDI OUT (X)	0.8 V p-p Zi = 75 Ω ±5 % 270 Mbps	EN VIDEO OUT (X)	1.0 V p-p Zi = 75 Ω ±5 % DC = 0 ±100 mV
2	SDI OUT (G)	GND for SDI OUT (X)	EN VIDEO/ CF OUT (G)	GND for EN VIDEO OUT (X)/CF OUT
3	Y OUT (G)	GND for Y OUT (X)	Y OUT (G)	GND for Y OUT (X)
4	Y OUT (X)	1.0 V p-p Zi = 75 Ω ±5 % DC = 0 ±200 mV	Y OUT (X)	1.0 V p-p Zi = 75 Ω ±5 % DC = 0 ±200 mV
5	R-Y OUT (X)	V = 714 mV p-p (Burst) ±2 % (75 % COLOR BARS) DC = 0 ±200 mV	R-Y OUT (X)	V = 714m V p-p (Burst) ±2 % (75 % COLOR BARS) DC = 0 ±200 mV
6	R-Y OUT (G)	GND for R-Y OUT (X)	R-Y OUT (G)	GND for R-Y OUT (X)
7	B-Y OUT (X)	V = 714 mV p-p (75 % COLOR BARS) DC = 0 ±200 mV	B-Y OUT (X)	V = 714 mV p-p (75 % COLOR BARS) DC = 0 ±200 mV
8	B-Y OUT (G)	GND for B-Y OUT (X)	B-Y OUT (G)	GND for B-Y OUT (X)
13	BATT IND	Zi = 300 Ω	BATT IND	Zi = 300 Ω
14	VBS/ SDI SELECT IN	2.5 V	—	
15	REC ALARM IN	Zi ≧ 20 kΩ Note 2	REC ALARM IN	Zi ≧ 20 kΩ Note 2
20	AUDIO MOITOR	Zi = 750 Ω AUDIO MOITOR SAVE: 4.5 ±0.5V STANDBY: 9.0 ±1.0 V −0.5 V Zo = 10 kΩ	Zi = 750 Ω	SAVE: 4.5 ±0.5 V STANDBY: 9.0 ±1.0 V −0.5 V Zo = 10 kΩ
22	CF OUT	DC = 5.0 ±1.0 Vp-p Zo = 1 kΩ ±5 %	—	

Note 1: Specifications of BATT IND Signal

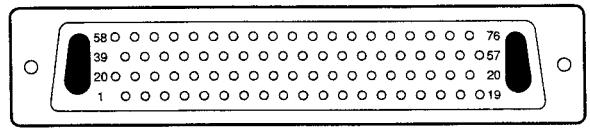
VTR has a battery voltage detection and waring signal generation circuits and it sends the signal shown below to the camera.

Battery Terminal Voltage (VTR inernal battery)	17.0 – 11.1 V dc	11.1 – 10.8 V dc	10.8 V dc –
Input Signal at Pin 13	0 V	1.0 ±0.2 Hz or 4.0 ±0.8 Hz (duty 50 ±10 %)	2.5 ±0.5 V dc
LED on Viewfinder	Stays out	Blinks	Lights up

Note 2: Specifications of REC ALARM Signal


Input Signal at Pin 15
5.0 ±1.0 Vdc
2.5 ±0.5 Vdc
0 ±0.3 Vdc
REC Tally signal 1.0 ±0.2 Hz or 4.0 ±0.8 Hz (duty 50 ±10 %)
REC RESET signal 10 - 100 ms
VTR Action
Power OFF
Power ON
When VTR changes from POWER SAVE to REC START mode, or when the servo is lost
When VTR changes from STANDBY to REC START mode, or in REC mode
At the end of tape or When VTR is put into STOP mode by itself (REC RESET signal does not appear when VTR is put intoSTOP mode by operation the camera)
STOP mode

CAMERA/CA (76P, FEMALE)



(EXTERNAL VIEW)

No.	Signal	I/O	Specifications
1	REC TALLY	IN	Zi ≧ 600 Ω
2	S.D. (V/C)	IN	H : 5 V L : 0 ±0.5 V
3	SCL VTR	IN	Zi ≧ 47 kΩ Zo ≦ 1 kΩ
4	GENLOCK (G)	–	GND for GENLOCK (X)
5	SYNC (G)	–	GND for SYNC (X)
6	PB (G)	–	GND for PB (VBS) (X)
7	PB (Y) (X)	IN	1.0 V p-p, NEGATIVE, Zi ≧ 1 kΩ
8	VBS (CA) (G)	–	GND for VBS (CA) (X)
9	$\overline{\text{VTR}}$/CCU	OUT	VTR : 0 ±0.25 V, Zo ≦ 1 kΩ CCU : 5.0 ±0.5 V
10	C (X)	OUT	NTSC : 0.286 V p-p ±10 % PAL : 0.300 V p-p ±10 % Zo ≦ 75 Ω ±5 %
11	Y (X)	OUT	1.0 V p-p, SYNC NEGATIVE Zo ≦ 75 Ω ±5 %
12	R/R-Y (CA)	OUT	R/G/B 1.4 V p-p, POSITIVE
13	B/B-Y (CA)	OUT	Zo ≦ 75 Ω ±5 % COMPONENT OUT *1
14	SKIN GATE	OUT	Gate area (H : 4 to 5.5 V dc) Non gate area (L : 0 ±0.2 V dc)
15	+5.0V	OUT	5 V ±0.1 V
16	AGND	–	REG, GND
17	EXT DC	IN	10.6 V to 17.0 V dc
18	EXT DC GND	–	GND for EXT DC
19	DCLK (X)	OUT	
20	VTR TRIG	OUT	
21	S.D. (C/V)	OUT	H : 5 V L : 0 ±0.5 V
22	CS VTR	IN	Zi ≧ 47 kΩ Zo ≦ 1 kΩ
23	GENLOCK (X)	IN	VBS : 1.0 V p-p Zi ≧ 1 kΩ
24	SYNC (X)	IN	H : 4.0 to 5.5 V p-p : NEGATIVE L : 0 ±0.4 V dc Zo ≦ 2 kΩ
25	PB (VBS) (X)	IN	1.0 V p-p, SYNC NEGATIVE Zo ≦ 75 Ω ±5 %
26	CF/V RESET	I/O	H : 4.0 to 5.5 V p-p, Zo ≦ 2 kΩ L : 0 ±0.4 V dc

No.	Signal	I/O	Specifications
27	VBS (CA) (X)	OUT	1.0 V p-p, SYNC NEGATIVE Zo = 75 Ω ±5 %
28	C (G)	–	GND for C (X)
29	Y (G)	–	GND for Y (X)
30	COMP GND	–	GND for G/Y (CA)
31	G/Y (CA)	OUT	R/G/B 1.4 V p-p, POSITIVE Zo ≦ 75 Ω ±5 % COMPONENT OUT *1
32	BATT S.DATA	IN	
33	+9.0 V	OUT	8.3 V to 9.1 V
34	–5.0 V	OUT	–5 V ±0.1 V
35	EXT DC	IN	10.6 V to 17.0 V dc
36	EXT DC GND	–	GND for EXT DC
37	DCF	OUT	
38	DCLK GND	–	
39	MODE ID	IN	OPEN : COMP, GND : R/G/B
40	MIC1 (G)	–	
41	AUDIO LEV	OUT	H : 4 to 5.5 V dc L : 0 ±0.2 V dc, 1 kΩ
42	(SPARE)		
43	DIGI/ANA	IN	H : Analog L : Digital
44	VF VIDEO	OUT	OPEN : CAM L : PB
45	(SPARE)		
46	(SPARE)		
47	(SPARE)		
48	(SPARE)		
49	(SPARE)		
50	(SPARE)		
51	(SPARE)		
52	DCLK GND	–	GND for DCLK (X)
53	BYRY (0)	OUT	H : 3 ±0.2 V dc
54	BYRY (2)	OUT	L : 0 ±0.2 V dc
55	BYRY (4)	OUT	
56	BYRY (6)	OUT	
57	BYRY (8)	OUT	
58	MIC1 (X)	OUT	–20 dBm, Zo ≦ 100 Ω
59	MIC1 (Y)	OUT	

(Continue to next page)

(Continued)

No.	Signal	I/O	Specifications
60	(SPARE)		
61	(SPARE)		
62	76P ID		
63	(SPARE)		
64	(SPARE)		
65	(SPARE)		
66	(SPARE)		
67	(SPARE)		
68	(SPARE)		
69	(SPARE)		
70	(SPARE)		
71	(SPARE)		
72	BYRY (1)	OUT	H : 3 ±0.2 V dc
73	BYRY (3)	OUT	L : 0 ±0.2 V dc
74	BYRY (5)	OUT	
75	BYRY (7)	OUT	
76	BYRY (9)	OUT	

*1: The level of this signal varies according to the camera system to be connected.
Following serial numbers show the serial number of camera.

	Serial No. 30001 and higher 300001 and higher	Serial No. 10001 and higher 100001 and higher	Serial No. 40001 and higher 400001 and higher
Y	0.714 V p-p	0.714 V p-p	0.700 V p-p
R-Y	0.756 V p-p	0.700 V p-p	0.525 V p-p
B-Y	0.756 V p-p	0.700 V p-p	0.525 V p-p

1-2-2. Connection Connector

Connection made with the connector panels during installation or service, should be made with the connectors/complete cable assemblies specified in the following list, or equivalent parts.

Connector Name	Connection Connector/Cable
SDI OUT	1-560-370-12 PLUG, BNC, or Coaxial cable BELDEN 1694A, Bryant Broadcast LVC500 or equivalent
PROMPT/GENLOCK	1-560-370-12
CCU/VTR/CMA	Plug 26P FEMALE 1-564-184-21, or CCZ Cable assembly CCZ-A25 (25 m) to CCZ-A100 (100 m)
DC IN	XLR 4P FEMALE 1-508-362-00
EARPHONE	Mini jack (ø3.5 mm)
INTERCOM	Mini jack 4 (ø3.5 mm) (Compliant with 1A 4-pole small plug)

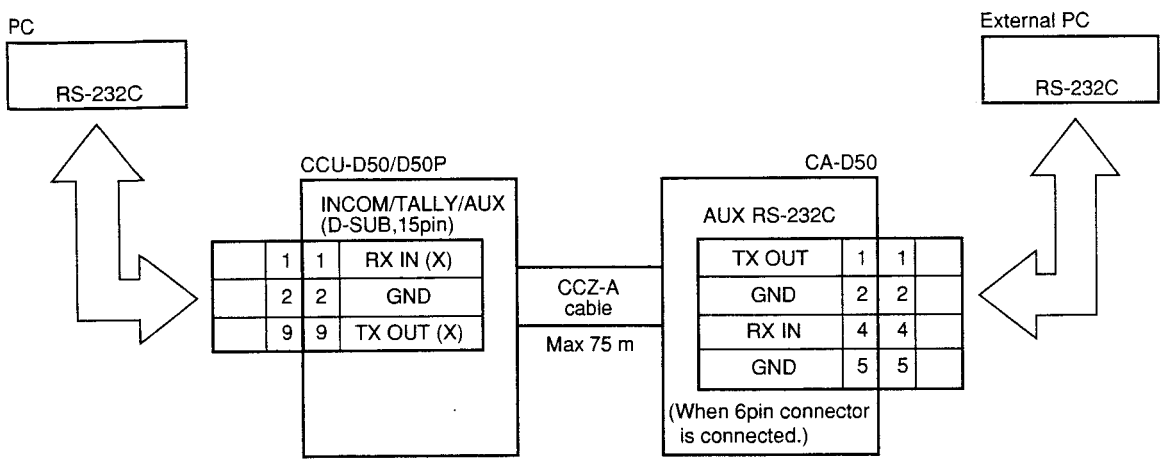
1-3. AUX RS-232C Communicating Function

Between CCU-D50/D50P and camera adaptor CA-D50, it is possible to secure the RS-232C communication line using analog R/R-Y/C and G/Y/Y signal lines.
Use of this function enables it to transmit RS-232C communication between CCU and CA same as external personal computer. This transmission is performed using CCZ-A cable.
When using this function, the switch settings for both CCU and CA and modification of CA are required.
For the detailed switch settings for CCU and the information of connection connector, refer to the Service Manual of CCU-D50/D50P.

1-3-1. Communication Specifications and Connection Sample

Communication specifications
Baud rate: 115200 bps
Maximum cable length: Use CCZ-A cable with 75 m or less in length.

Connection sample:



1-3-2. Switch Setting of CA-D50

PR-270/270A Board (CCU-D50/D50P)

For details refer to the Service Manual Volume 1 of CCU-D50/D50P.

IF-880 Board (CA-D50)

Ref. No.	Designation	Switch setting
S102	AUX_RS232C_SEL	AUX_RS232C Factory setting: NORMAL

1-3-3. Modification of CA-D50

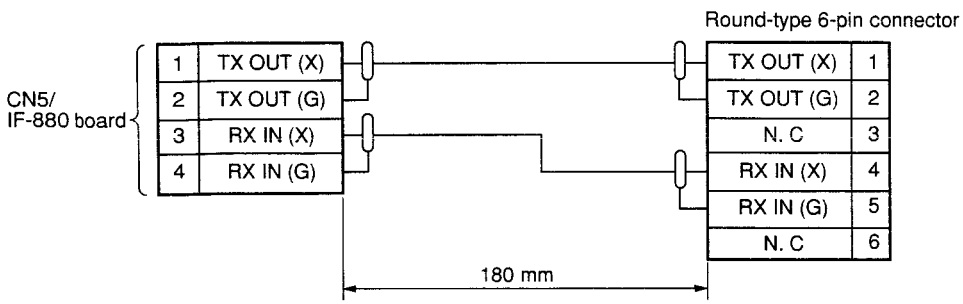
This section describes the modification procedures using the round-type 6-pin connector (FEMALE).

Parts to be required

- Round-type 6-pin Connector (FEMALE): HIROSE HR10A-7R-6S or equivalent (Sony part No.: 1-562-222-31) — 1 pc
- Housing 4-pin: (Sony part No.: 1-569-619-11) — 1 pc
- Contact (for RX OUT (X)): (Sony part No.: 1-565-977-00) — 2 pcs
- Contact (for RX OUT (G)): (Sony part No.: 1-766-387-11) — 2 pcs
- Shielded wire UL-1691 AWG-30 — 2 pcs (with 180 mm in length)
- Connector 6-pin MALE: HIROSE HR10A-7P-6P or equivalent (Sony part No.: 1-566-365-11) — 1 pc

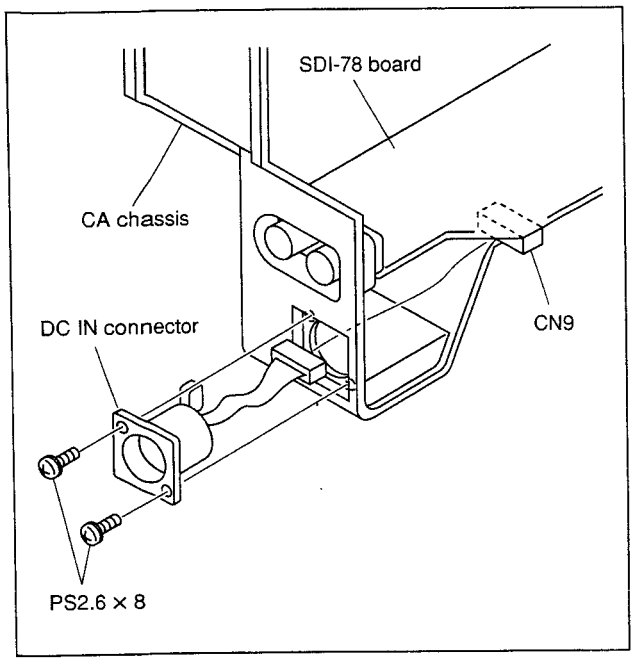
How to Make the AUX RS-232C Harness

Make the AUX RS-232C harness according to diagram.

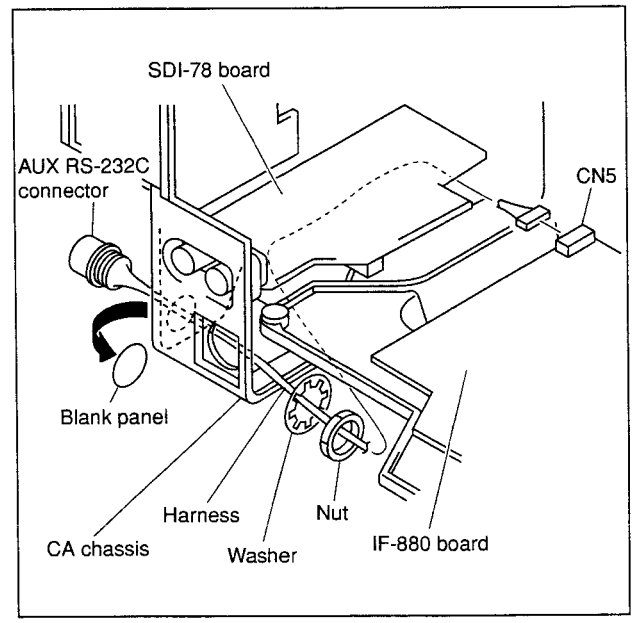


Installing the AUX RS-232C Harness

1. Open the side panel. (Refer to Section 1-6.)
2. Remove the DC IN connector. (Refer to Section 1-11-6.)



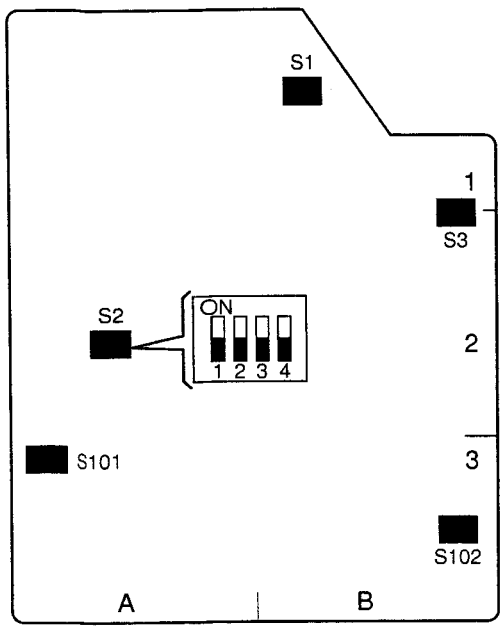
3. Peel off the blank panel of CA chassis.
4. Pass the harness through the mounting hole of connector, and attach the round-type 6-pin connector to the CA chassis with nut.
5. Pass the harness under the SDI-78 board, and connect it to the connector CN5 on the IF-880 board.



6. Install the DC IN connector.
7. Turn the switch S102 on the IF-880 board to AUX RS-232C side. (Refer to Section 1-4.)
8. Close the side panel.

1-4. Settings of Internal Switches

IF-880 Board



IF-880 board (A SIDE)

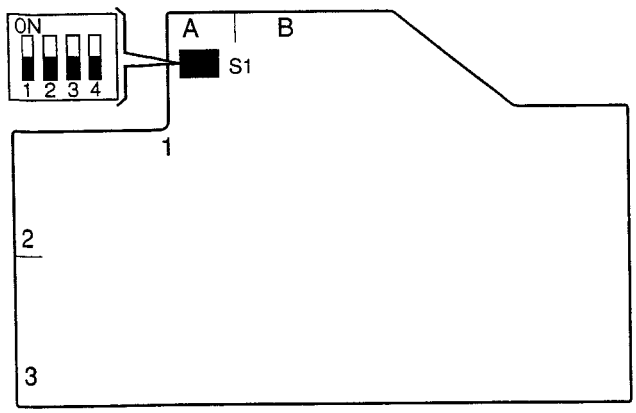
Note

*1: Set the followings according to the CCU to be connected.

CCU to be connected	Setting on the board of CCU	Switch setting
CCU-D50	—	AUTO
CCU-M5A	S1/VA-201 → PROMPT (factory setting)	AUTO
	S1/VA-201 → RETURN	RETURN
CCU-M5	—	RETURN
CCU-M7	—	RETURN

Ref. No.	Designation	Description	Factory setting
S1	CHU/ROM WRITE	CHU: Normal use ROM WRITE: Selects when upgrading software.	CHU
S2-1	COMP/RGB	Selects the output signal feed out from the CCU/VTR/CMA connector. ON: R/G/B OFF: Component signal	OFF
S2-2	COMP/YC	ON: Y/C (S-VIDEO) OFF: Component signal	OFF
S2-3	CABLE COMP	ON: Turns on the cable compensation circuit for the GENLOCK/PROMPT signal.	OFF
S2-4	—	Spare	OFF
S3	SENS_OUT/SDI_CTL_IN	Selects the signal connecting to the 14-pin of the CCU/VTR/CMA connector. Select corresponding to the CCU to be connected. CCU_M7: When the CCU-M7 is connected. (Connects the SENS_OUT signal) OTHERS: When other CCU is connected. (Connects the SDI_CTL_IN signal)	OTHERS
S101	RETURN/PROMPT_SEL	Selects the selection method of the PROMPTER signal corresponding mode when the CCU is connected. *1 AUTO: According to the setting of CCU side RETURN: Forcibly set to RETURN mode (PROMPTER not capable) (It is not depending to the CCU to be connected.)	AUTO
S102	AUX_RS232C_SEL	Selects the R/R-Y/C or Y/G/Y line. Sets when AUX RS-232C communicating function is using. (Refer to Section 1-3 for details.) NORMAL: Normal use (Connects the analog signal transmission circuit.) AUX_RS232C: When the AUX RS-232C communicating function is used. (Connects the RS-232C driver circuit.)	NORMAL

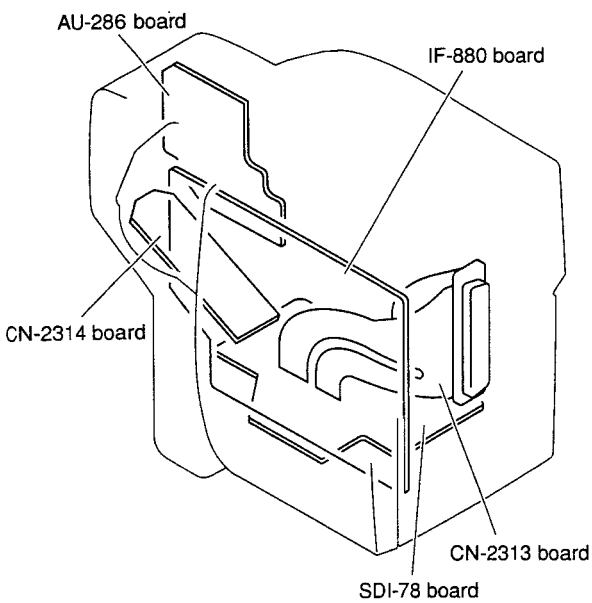
SDI-78 Board



SDI-78 board (A SIDE)

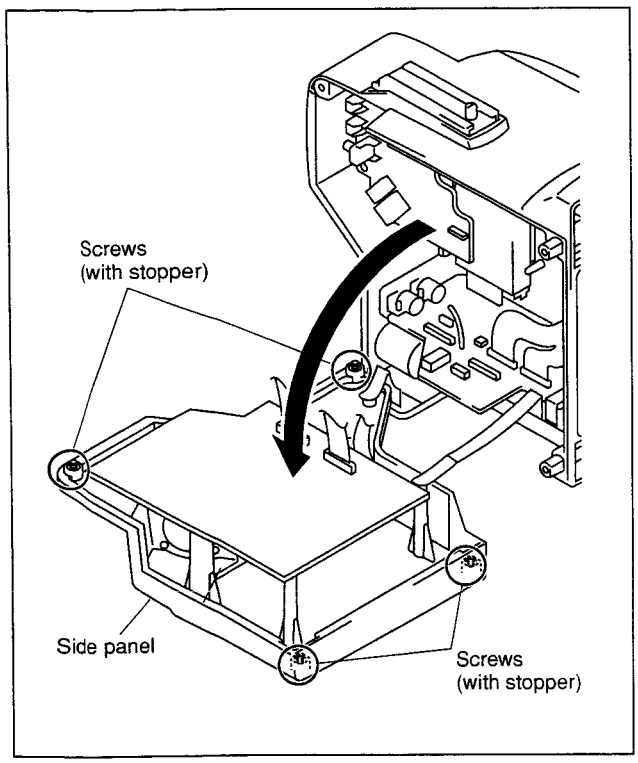
Ref. No.	Designation	Description	Factory setting
S1-1	CLK ADJ	Set to ON when the free-running adjustment for IC60 is executed.	OFF
S1-2	SDI (CCU)	ON: Forcibly puts into the SDI transmission (CCZ cable) mode. (Outputs the SDI signal to 1 pin, and VBS signal to 7 pin of the CCU/VTR/CMA connector.)	
S1-3	SDI (CCZ)	ON: Forcibly puts into the SDI correspondence VTR connection mode. (Outputs the SDI signal to 1 pin of the CCU/VTR/CMA connector.)	OFF
S1-4	SDI (BNC) OFF	ON: Power save mode Sets the SDI output (BNC) to OFF during the analog transmission mode.	OFF

1-5. Location of Printed Wiring Boards



1-6. Opening the Side Panel

1. Loosen the four screws (with stopper) and open the side panel in the arrow direction.



Note

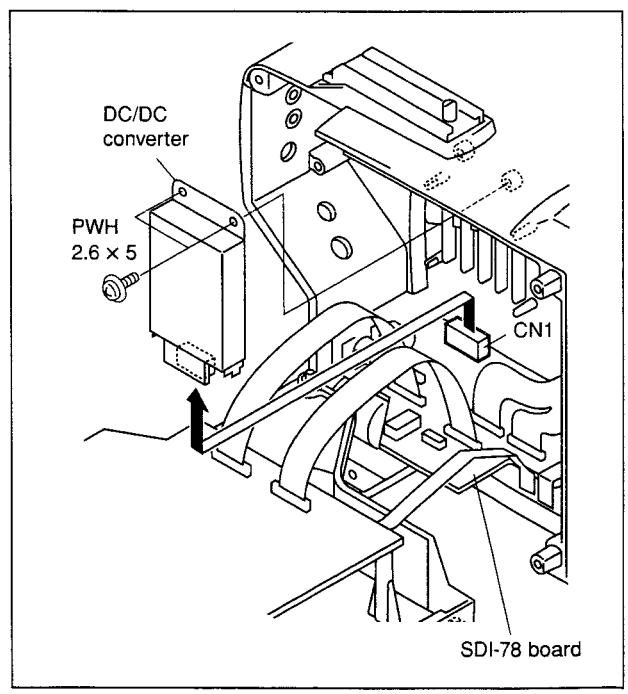
Be careful not to bend the flexible card wires.
This shortens the wire life.

1-7. Replacing the DC/DC Converter

Notes

- When replacing, be sure to disconnect the cable connected at the CAMERA/VTR/CMA connector or DC IN connector in addition to turning off the POWER switch of the camera.
- The electrical parts inside the DC/DC converter can not be replaced, if there is any defective part, replace the DC/DC converter itself.

1. Open the side panel. (Refer to Section 1-6.)
2. Remove the AU-286 board. (Refer to Section 1-11-3.)
3. Remove the two screws, and remove the DC/DC converter.



1-8. Upgrading the Software

The software of this unit can be upgraded by the following procedures.

Equipment

- Personal computer (Here and after abbreviated to PC.)
  Serial port: 9-Pin D-sub connector
  Terminal software for serial port connection
  Note
  The screen differs according to the terminal software to be used.

- RS-232C interface cable
  (Sony part No.: J-6510-120-A)
- ROM DATA for software updating:
  (CAD50_Vxxxx.xho)*
- LOAD module for software updating:
  (CAD50LD_Vxxxx.xho)*
- Camera: DXC-D35/D35P/D30/D30P
- AC adaptor: CMA-8A/8ACE or AC-550/550CE

  * : Vxxxx shows the version No.

Preparation

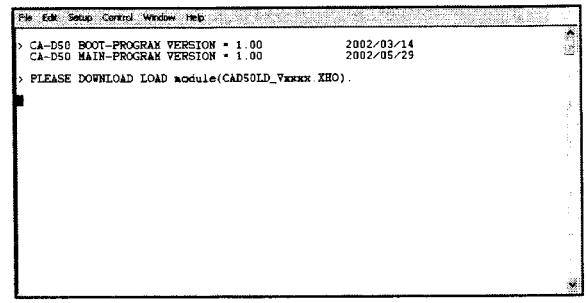
Download the ROM DATA (CAD50_Vxxxx.xho) and LOAD module (CAD50LD_Vxxxx.xho) to PC.

Procedures

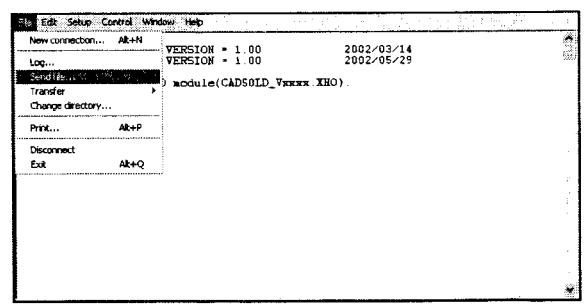
1. Open the side panel. (Refer to Section 1-6.)
2. Set the switch S1 (B-1) on the IF-880 board to ROM WRITE side.
3. Connect the RS-232C interface cable to the connector CN7 (B-1) on the IF-880 board.
4. Connect the RS-232C interface cable to RS-232C port (D-sub 9P) of PC.
5. Run the terminal software, and set the communication port as follows.

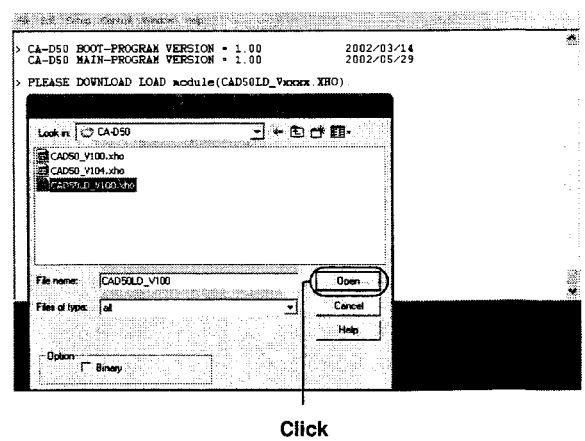
   Baud rate: 38400 bps
   Data bits: 8
   Parity bit: Non
   Stop bit: 1
   Flow control: Xon/Xoff

6. Connect the AC adaptor, and turn ON the POWER switch of the camera.
7. When the unit normally turns into the ROM WRITE mode, the indicator (D3) on the IF-880 board and the tally lamp on the viewfinder of the camera blink.
8. Press Enter key on the PC to connect the PC to CA-D50, the current version will be displayed.


File Edit Setup Control Window Help
CA-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/14
CA-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
PLEASE DOWNLOAD LOAD module(CAD50LD_Vxxxx.XHO).

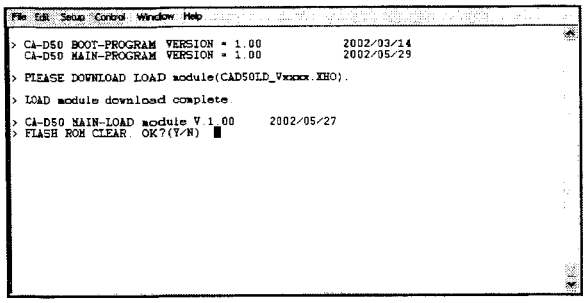
9. Download the LOAD module from PC to CA-D50 with text mode.
   File name: CAD50LD_Vxxxx.xho



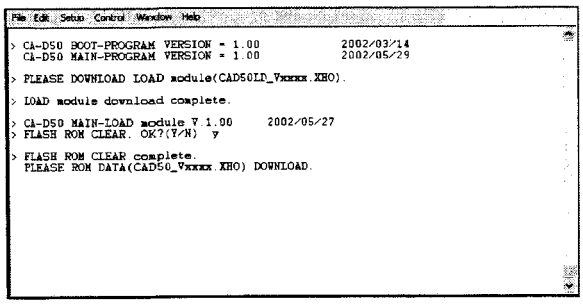


Click

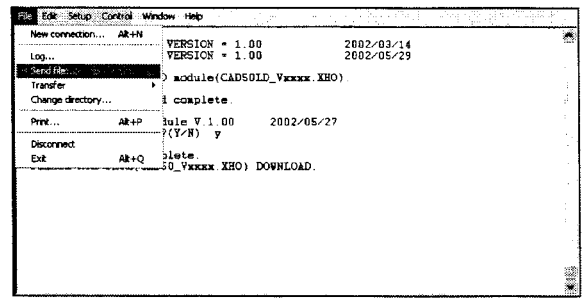
10. When the program runs after the LOAD module was downloaded, the "FLASH ROM CLEAR" message to check the deletion of the current ROM will be displayed.
    When upgrading, click "y", and when stopping, click "n", and press Enter key.

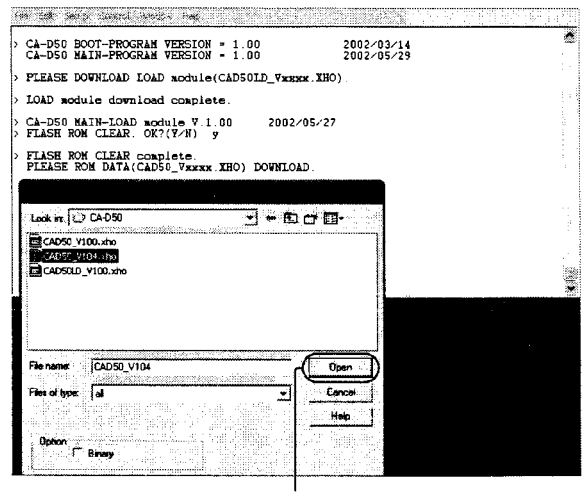

File Edit Setup Control Window Help
> CA-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/14
CA-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
> PLEASE DOWNLOAD LOAD module(CAD50LD_Vxxxx.XHO).
> LOAD module download complete.
> CA-D50 MAIN-LOAD module V.1.00 2002/05/27
> FLASH ROM CLEAR. OK?(Y/N)

11. When the deletion of the program ROM was finished, the message to urge the download of the program is displayed.


File Edit Setup Control Window Help
> CA-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/14
CA-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
> PLEASE DOWNLOAD LOAD module(CAD50LD_Vxxxx.XHO).
> LOAD module download complete.
> CA-D50 MAIN-LOAD module V.1.00 2002/05/27
> FLASH ROM CLEAR. OK?(Y/N) y
> FLASH ROM CLEAR complete.
PLEASE ROM DATA(CAD50_Vxxxx.XHO) DOWNLOAD.

12. Download the ROM DATA from PC to CA-D50 with text mode.
    File name: CAD50_Vxxxx.xho



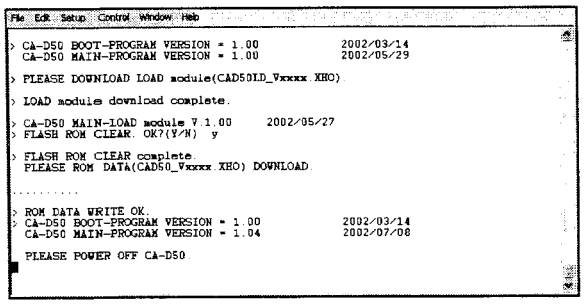


Click

13. When the downloading was completed, the version of the new ROM DATA is displayed.

Note

Be sure not to turn OFF the POWER till the downloading is finished.


File Edit Setup Control Window Help
> CA-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/14
CA-D50 MAIN-PROGRAM VERSION = 1.00 2002/05/29
> PLEASE DOWNLOAD LOAD module(CAD50LD_Vxxxx.XHO)
> LOAD module download complete.
> CA-D50 MAIN-LOAD module V.1.00 2002/05/27
> FLASH ROM CLEAR. OK?(Y/N) y
> FLASH ROM CLEAR complete.
PLEASE ROM DATA(CAD50_Vxxxx.XHO) DOWNLOAD
> ROM DATA WRITE OK.
> CA-D50 BOOT-PROGRAM VERSION = 1.00 2002/03/14
CA-D50 MAIN-PROGRAM VERSION = 1.04 2002/07/08
PLEASE POWER OFF CA-D50

14. Turn OFF the POWER switch of the camera.
15. Reset the switch S1 (B-8) on the IF-880 board to CHU side.
16. Disconnect the RS-232C interface from the IF-880 board and PC.
17. Close the side panel.

1-9. Circuit Protection Device

The SDI-78 board is provided with positive thermistor for power line to protect circuit. This device limits a current by steeply increasing the internal resistance when the device rises to a certain temperature due to overcurrent or high ambient temperature. If the device is activates once, turn off the power and check the inside of the camera adaptor. After the cause is eliminated and the device cools off, turn on the power again. If there is no trouble, the unit will operate normally. It takes about a minute for the device to cool off after powering off the unit.

SDI-78 Board

Ref. No.	Address	Protection circuit
THP1	B-1	Internal circuit of camera adaptor

1-10. Disconnecting/Connecting Flexible Card Wire

The flexible card wires are used in board to board connections.
Be careful not to bend the flexible card wires. This shortens the wire life.
Two types of different shape connectors are used in this unit. (Type A and Type B)
Because the connecting and disconnection methods of the flexible card wire are different depending on shape of the connector, be careful when connecting the flexible card wire.

Disconnecting

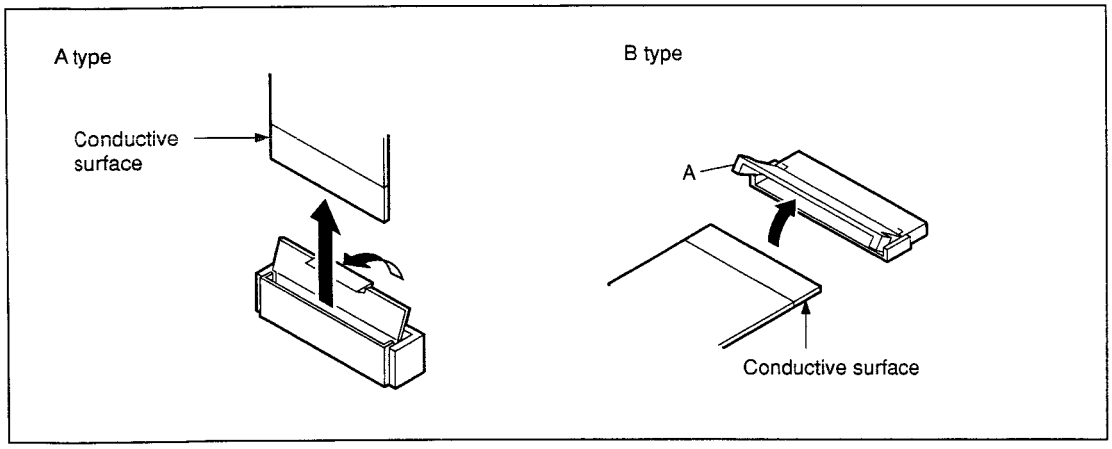
1. Turn off the power.

A type

2. Turn the lock lever in the opposite direction of the arrow to unlock and pull out the flexible card wire.

B type

2. Slide portions A in the arrow direction to unlock and pull out the flexible card wire.



Connecting

Notes

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

A type

1. Slide the lock lever in the opposite direction of the arrow to unlock and insert the flexible card wire as far as it will go with the conductive surface faces as shown in the figure.
2. Turn the lock lever in the arrow direction to lock.

B type

1. Slide the portions A in the arrow direction to unlock and inset the flexible card wire as far as it will go with the conductive surface down.
2. Slide the portions A in the opposite direction to lock.

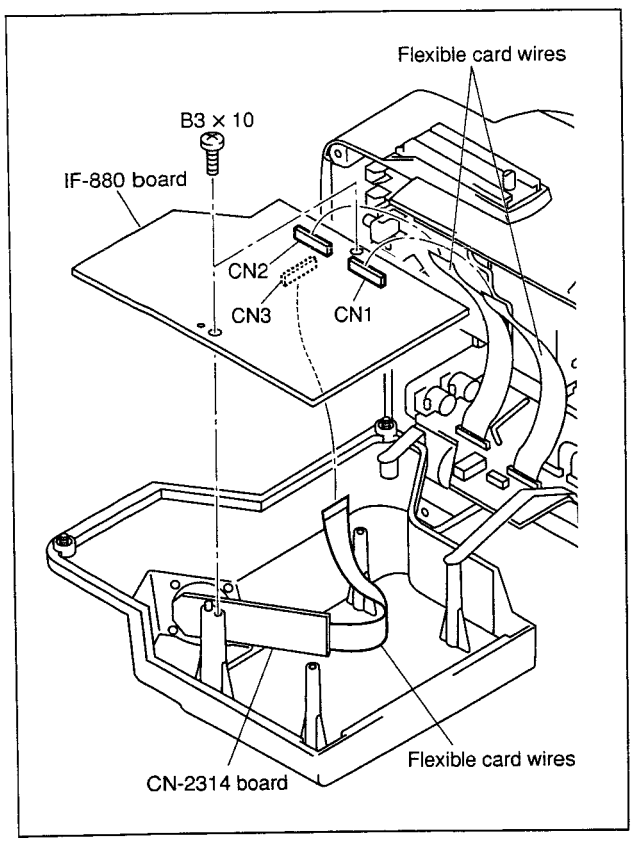
1-11. Removing and Reinstalling the Boards

1-11-1. IF-880 Board

1. Open the side panel. (Refer to Section 1-6.)
2. Disconnect the flexible card wires from the connectors CN1 and CN2 on the IF-880 board.
3. Remove the two screws and remove the IF-880 board.
4. Disconnect the flexible card wire from the connector CN3 on the IF-880 board.

Note

Be careful not to bend the flexible card wire.
This shortens the wire life.



5. Reinstall the board in the reverse order of removal.

1-11-2. CN-2314 Board

1. Open the side panel. (Refer to Section 1-6.)
2. Remove the IF-880 board. (Refer to Section 1-11-1.)
3. Remove the four screws.
4. Disconnect the coaxial cable from the coaxial connector CN3 on the CN-2314 board.

Note

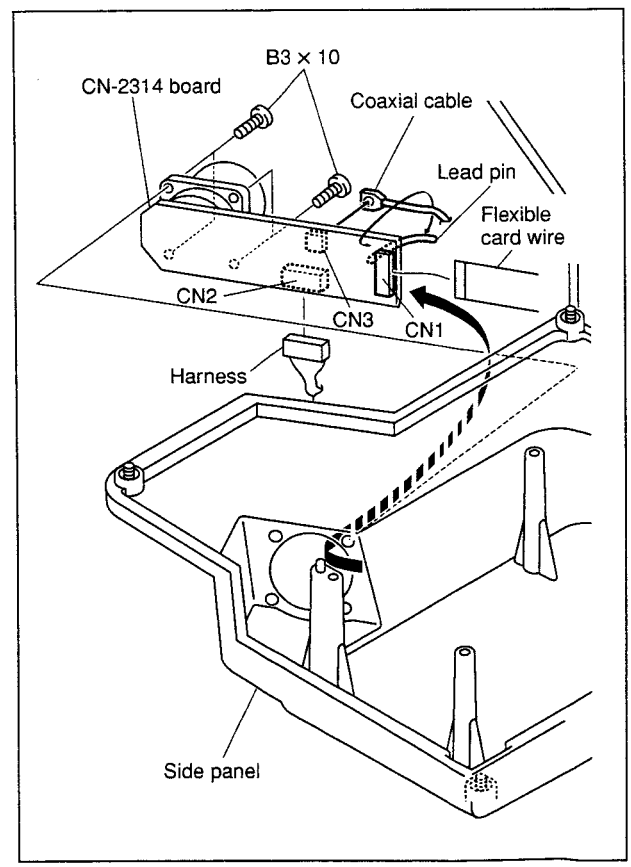
When disconnecting the coaxial cable, do not pull the cable itself. Hold the connector plug portion after the lead pin is bended shown in the figure, and disconnect it.

5. Disconnect the flexible card wire and harnesses from the connectors CN1 and CN2 on the CN-2314 board.

Note

When removing the flexible card wire, keep in mind that there is the lead pin.

6. Pull out the CN-2314 board from the hole of the side panel.

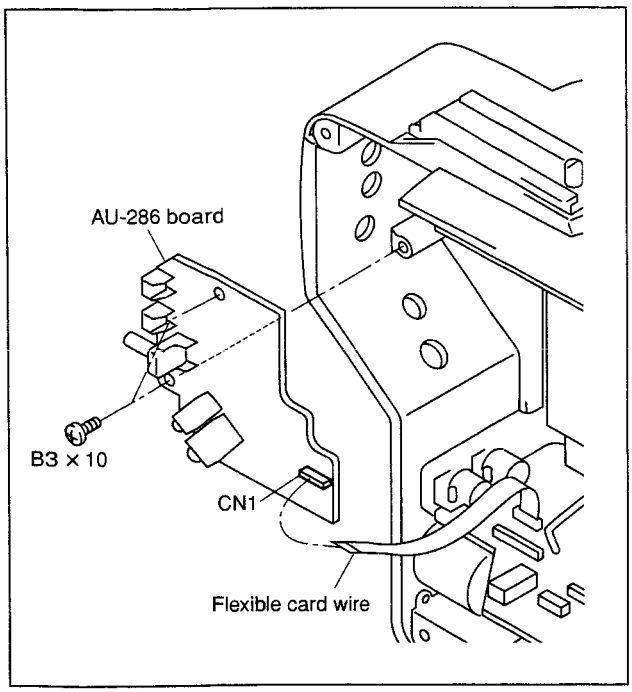


7. Reinstall the board in the reverse order of removal.

1-11-3. AU-286 Board

1. Open the side panel. (Refer to Section 1-6.)
2. Disconnect the flexible card wire from the connector CN1 on the AU-286 board.
   Note
   Be careful not to bend the flexible card wire.
   This shortens the wire life.

3. Remove the two screws and remove the AU-286 board.



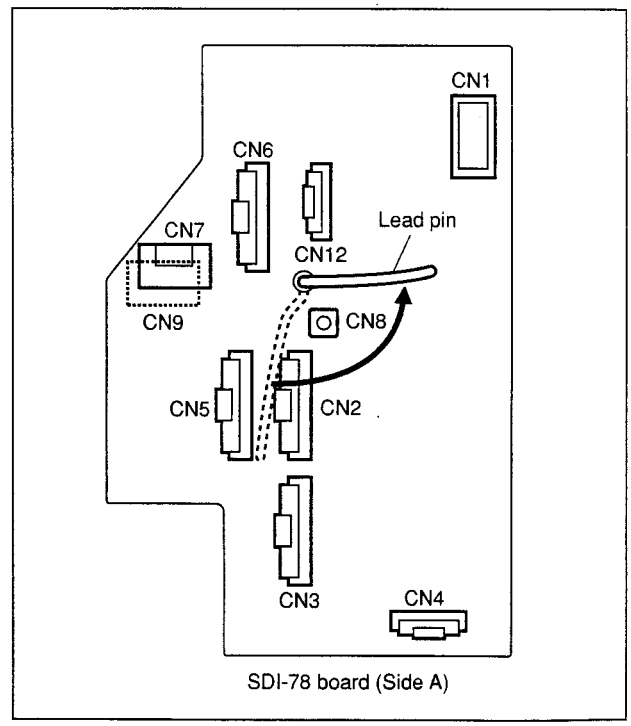
4. Reinstall the board in the reverse order of removal.

1-11-4. SDI-78 Board

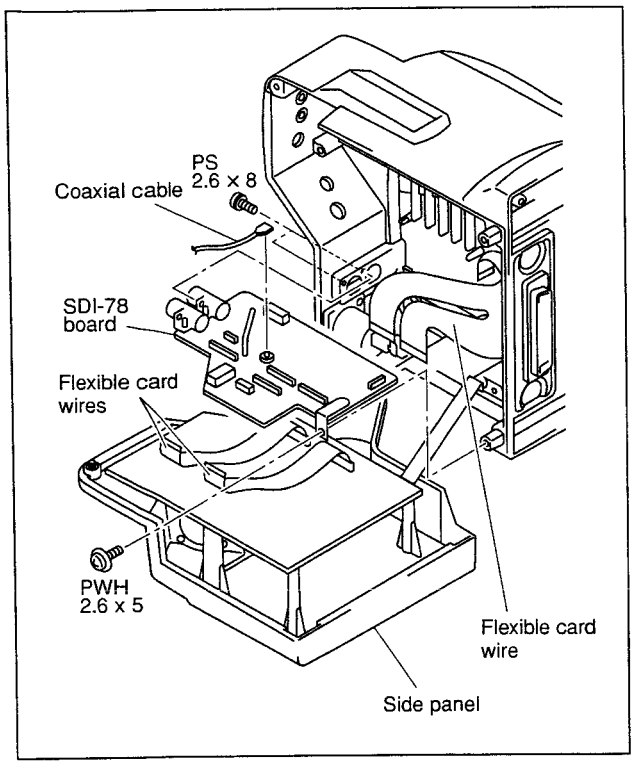
1. Open the side panel. (Refer to Section 1-6.)
2. Disconnect the flexible card wires from the connectors CN2 to CN6 and CN12 on the SDI-78 board.
   Note
   Be careful not to bend the flexible card wire.
   This shortens the wire life.

3. Disconnect the coaxial cable from the coaxial connector CN8 on the SDI-78 board.
   Note
   When disconnecting the coaxial cable, release the clamping of the lead pin first, and remove the coaxial cable.

4. Disconnect the harnesses from the connectors CN7 and CN9 on the SDI-78 board.



5. Remove the two screws, and remove the DC/DC converter. (Refer to Section 1-7.)
6. Remove the three screws, and remove the SDI-78 board.



7. Reinstall the board in the reverse order of removal.

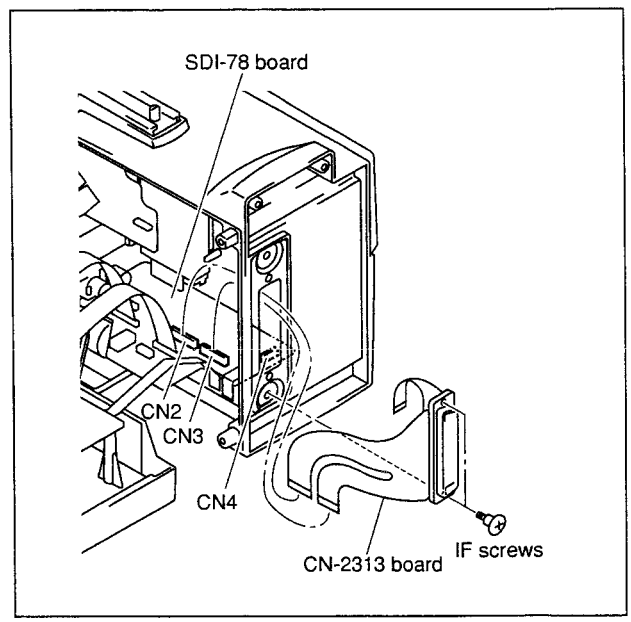
1-11-5. CN-2313 Board

1. Open the side panel. (Refer to Section 1-6.)
2. Disconnect the flexible card wires from the connectors CN2 to CN4 on the SDI-78 board.

Note

Be careful not to bend the flexible card wire.
This shortens the wire life.

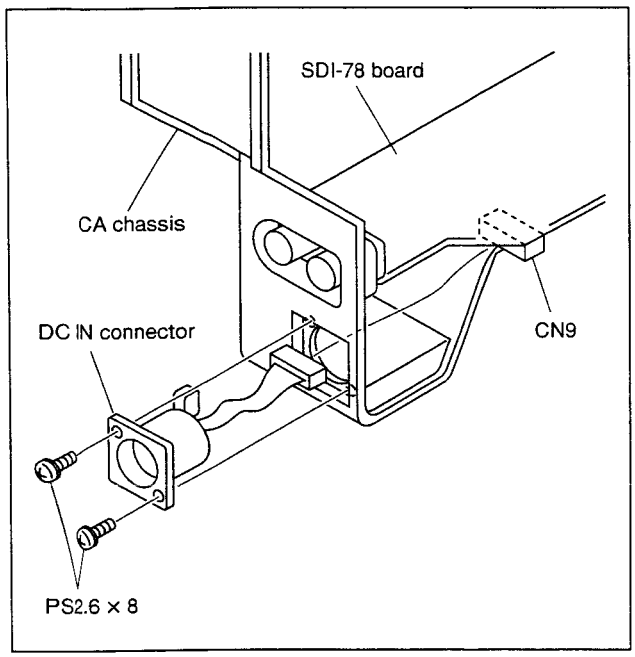
3. Remove the two IF screws, and remove the connector with CN-2313 board.



4. Reinstall the board in the reverse order of removal.

1-11-6. DC IN Connector

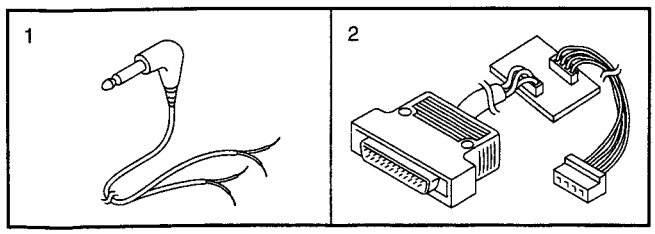
1. Open the side panel. (Refer to Section 1-6.)
2. Disconnect the harness from the connector CN9 on the SDI-78 board.
3. Remove the two screws, and remove the DC connector from the CA chassis.



4. Reinstall the board in the reverse order of removal.

1-12. Fixtures

Fig. No.	Part No.	Description	Purpose
1	1-557-039-00	Plug with cord	To SIDE TONE adjustment
2	J-6510-120-A	RS-232C interface cable (9P)	To update ROM program



Section 2
Electrical Alignment

Note

This adjustment described here is intended for the camera system using the camera with the following serial numbers.

Serial No. 10001 through 19999, 100001 through 199999
Serial No. 40001 through 49999, 400001 through 499999

2-1. Preparations

2-1-1. Equipment Required

Use the measuring instrument and test signal suitable for the TV system (NTSC or PAL) of the camera system to adjust.

- Waveform monitor
  Sony Tektronix 1750 (for NTSC)/1751 (for PAL) or equivalent
- Oscilloscope (Band width 100 MHz or more)
  Sony Tektronix 2465B or equivalent
- Frequency counter (27.00 MHz, 1 V p-p can be measured.)
  Advantest TR5821 or equivalent
- Video signal generator
  Sony Tektronix 1410 (for NTSC)/1411 (for PAL) or equivalent
- Audio signal generator (1 kHz, sine wave)
- Video camera
  DXC-D35/D35P/D35WS/D35WSP or DXC-D30/D30P/D30WS/D30WSP (completely adjusted)
- Camera control unit
  CCU-D50/D50P (completely adjusted)
- AC adaptor
  CMA-8A/8ACE or AC-550/550CE
- Camera cable CCZ-A100 (100 m)
- CCZ-RGB cable CCZ-RGB-3
  If the cable is not available, make it referring to Section 2-1-4.
- Coaxial cable (with BNC connectors)
  BELDEN 1694A, Bryant Broadcast LVC500 or equivalent
- Cord with plug (Sony part No. 1-557-039-00)

2-1-2. Notes on Adjustment

- All measuring equipment should be calibrated.
- Before adjustment, warm up the unit and measuring equipment for about 10 minutes.
- Open the side panel. (Refer to Section 1-6-1.)

2-1-3. Initial Settings

When the switch setting on the board changes from the customer setting position, it is recommend to write down the customer setting positions to the following table. After the adjustment is finished, be sure to return the switch to the customer setting position.

Switches on the board of CA-D50

Board	Switch	Initial Settings	Customer Setting Position
SDI-78	S1-1 (CLK ADJ)	OFF	
	S1-2 (SDI CCU)	OFF	
	S1-3 (SDI CCZ)	OFF	
	S1-4 (SDI BNC/OFF)	OFF	
IF-880	S1 (CHU/ROM WRITE)	CHU	
	S2-1 (COMP/RGB)	OFF	
	S2-2 (COMP/YC)	OFF	
	S2-3 (CABLE COMP)	OFF	
	S2-4 (Spare)	OFF	
	S3 (SENS_OUT/SDI_CTL_IN)	OTHERS	
	S101 (RETURN/PROMPT_SEL)	AUTO	
	S102 (AUX_RS232C_SEL)	NORMAL	

Switch on the Camera

POWER switch: ON

2-1-4. How to Make the CCZ-RGB Cable

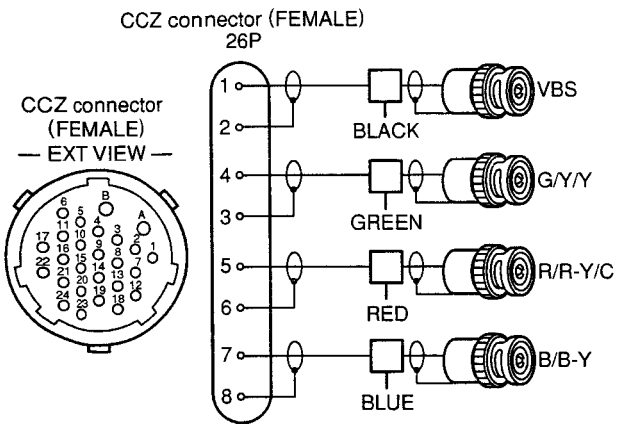
For the CA-D50 adjustment, the fixture is required for the output signals from the camera cable.
Make the fixture proceeding as follows.

Parts required

- CCZ connector 1 pc (Sony part No.: 1-564-184-21)
- BNC connectors 4 pcs (Sony part No.: 1-569-370-11)
- 75 Ω coaxial cable 4 pcs

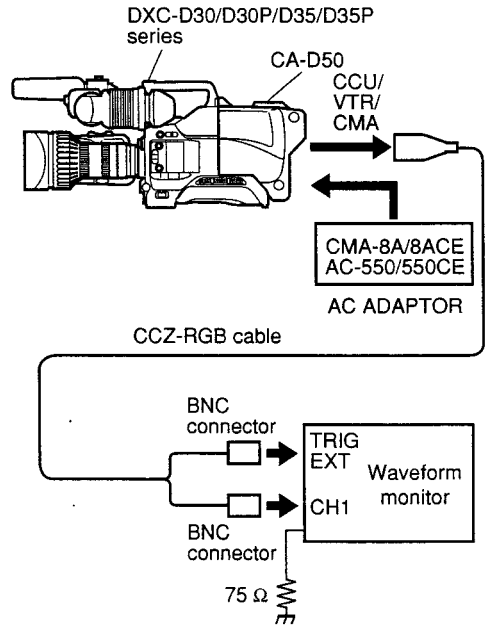
Procedures

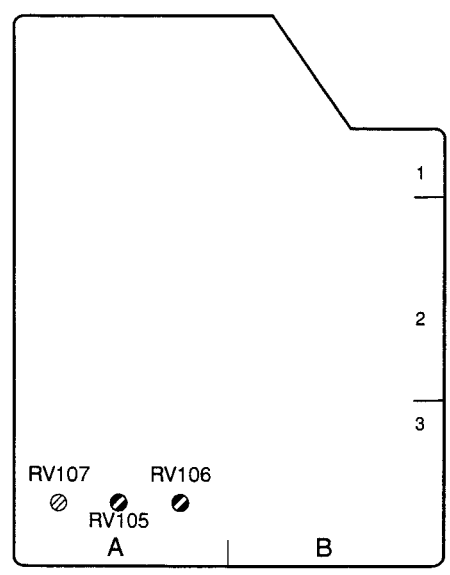
Make the fixture as shown in the figure below.
Stick a label on each cable to clarify the output signal.



2-2. Interface System Adjustment

Connection





IF-880 board (A SIDE)

2-2-1. Y OUT Level Adjustment

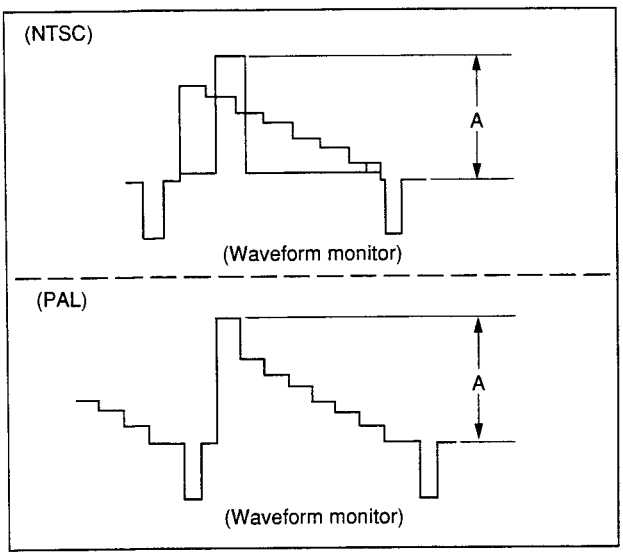
Equipment: Waveform monitor
Video camera DXC-D35/D35P/D35WS/
D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE
CCZ-RGB cable

Preparations

- Connect the BNC connector (black) of VBS OUT of the CCZ-RGB cable to the EXT TRIG terminal of the waveform monitor.
- Connect the BNC connector (green) of Y OUT of the CCZ-RGB cable to the waveform monitor.
- Set the waveform monitor to EXT mode.
- OUTPUT/DL/DCC + switch/Camera → BARS

Adjustment Procedures

Test Point: BNC connector (green) of Y OUT/
CCZ-RGB cable
Adjustment Point: ⊘RV106/IF-880
Specifications: NTSC: A = 714 ± 10 mV
PAL: A = 700 ± 10 mV



2-2-2. R-Y OUT Level Adjustment

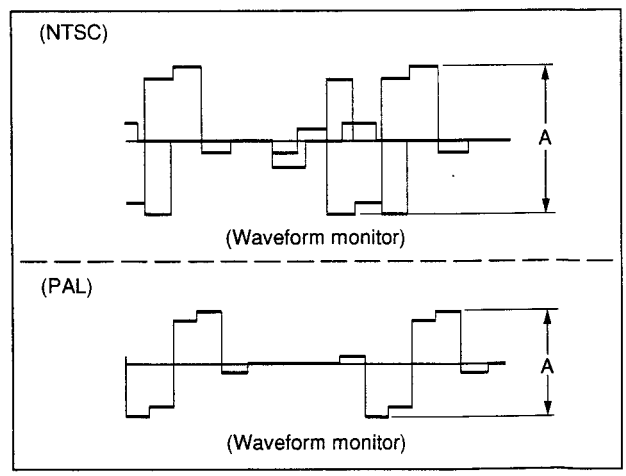
Equipment: Waveform monitor
Video camera DXC-D35/D35P/D35WS/
D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE
CCZ-RGB cable

Preparations

- Connect the BNC connector (black) of VBS OUT of the CCZ-RGB cable to the EXT TRIG terminal of the waveform monitor.
- Connect the BNC connector (red) of R-Y OUT of the CCZ-RGB cable to the waveform monitor.
- Set the waveform monitor to EXT mode.
- OUTPUT/DL/DCC + switch/Camera → BARS

Adjustment Procedures

Test Point: BNC connector (red) of R-Y OUT/
CCZ-RGB cable
Adjustment Point: ⊘RV105/IF-880
Specifications: NTSC (with setup): A = 700 ± 10 mV
PAL: A = 525 ± 10 mV



2-2-3. B-Y OUT Level Adjustment

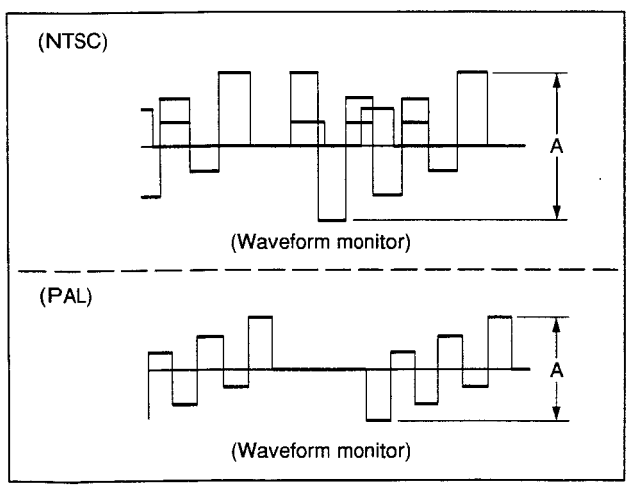
Equipment: Waveform monitor
Video camera DXC-D35/D35P/D35WS/
D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE
CCZ-RGB cable

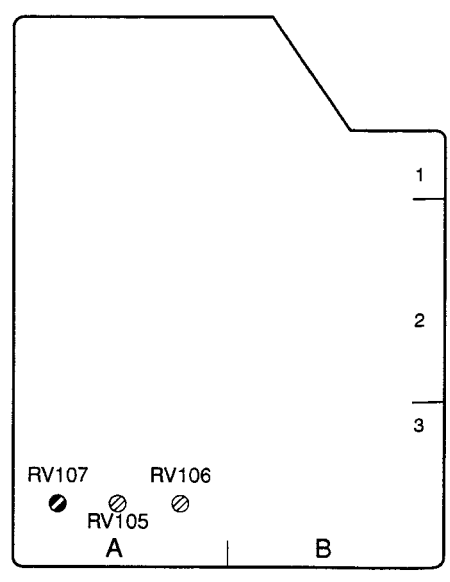
Preparations

- Connect the BNC connector (black) of VBS OUT of the CCZ-RGB cable to the EXT TRIG terminal of the waveform monitor.
- Connect the BNC connector (blue) of B-Y OUT of the CCZ-RGB cable to the waveform monitor.
- Set the waveform monitor to EXT mode.
- OUTPUT/DL/DCC + switch/Camera → BARS

Adjustment Procedures

Test Point: BNC connector (blue) of B-Y OUT/
CCZ-RGB cable
Adjustment Point: ◓RV107/IF-880
Specifications: NTSC (with setup): A = 700 ±10 mV
PAL: A = 525 ±10 mV





IF-880 board (A SIDE)

2-2-4. VBS OUT Level Adjustment

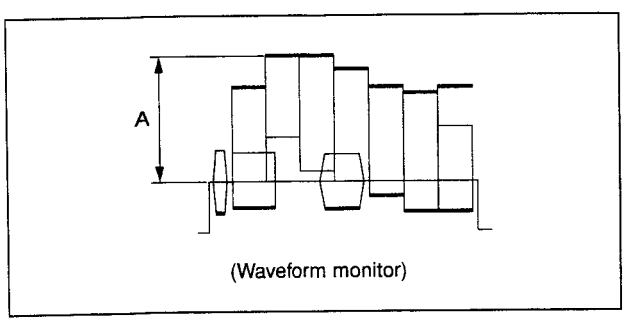
Equipment: Waveform monitor
Video camera DXC-D35/D35P/D35WS/
D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE
CCZ-RGB cable

Preparations

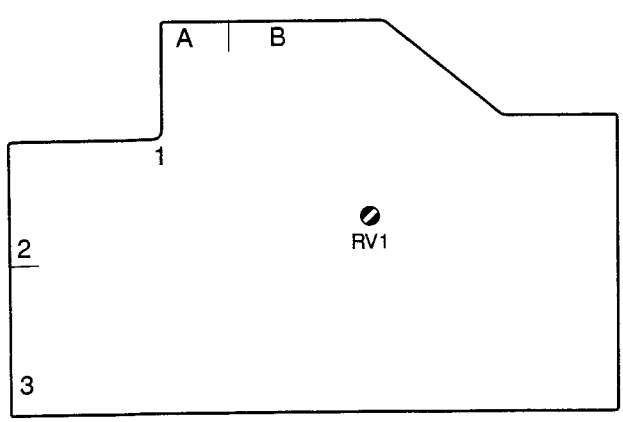
- Connect the BNC connector (black) of VBS OUT of the CCZ-RGB cable to the waveform monitor.
- Set the waveform monitor to INTERNAL mode.
- OUTPUT/DL/DCC + switch/Camera → BARS

Adjustment Procedures

Test Point: BNC connector (black) of VBS OUT/
CCZ-RGB cable
Adjustment Point: ⊘RV1/SDI-78
Specifications: NTSC: A = 714 ± 10 mV
PAL: A = 700 ± 10 mV



(Waveform monitor)

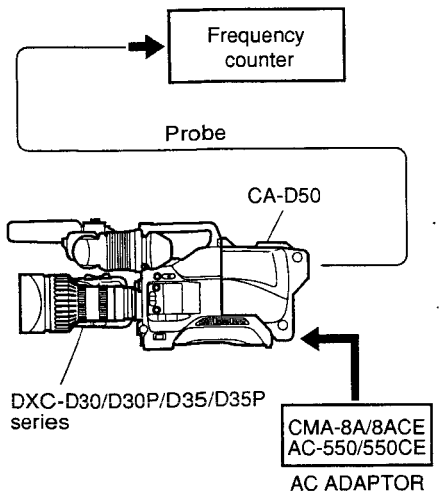


SDI-78 board (A SIDE)

2-3. SDI Free-running Frequency Adjustment

Equipment: Frequency counter
Video camera DXC-D35/D35P/D35WS/
D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE

Connection



Preparations

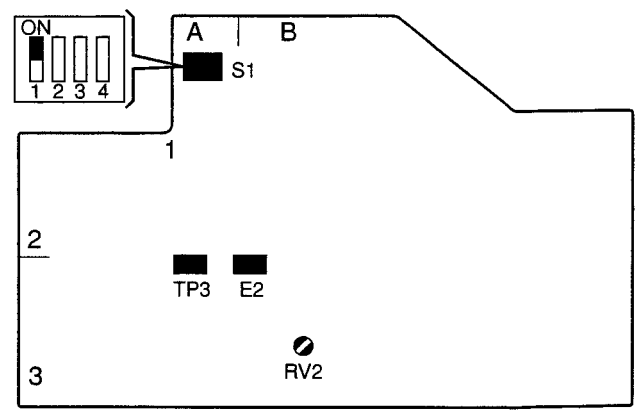
- S1-1/SDI-78 (CLK ADJ) → ON
- OUTPUT/DL/DCC + switch/Camera → BARS

Adjustment Procedures

Test Point: TP3/SDI-78 (GND:E2)
Adjustment Point: ⊘RV2/SDI-78
Specification: 27.0 ±0.1 MHz

Setting after Adjustment

Return the setting of S1-1 on the SDI-78 board (CLK ADJ) to OFF.

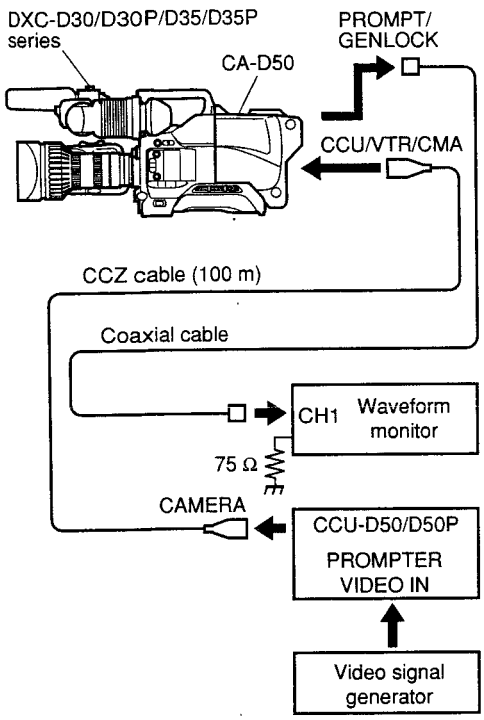


SDI-78 board (A SIDE)

2-4. PROMPT Video Level Adjustment

Equipment: Video signal generator
Waveform monitor
Camera control unit CCU-D50/D50P
Camera cable CCZ-A100 (100 m)
5C-2V coaxial cable (with BNC connectors)

Connection



Preparations

- Output signal/video signal generator → 10 step signal with sync
- System setting switch 2 (on the front panel of CCU-D50/D50P) → ON

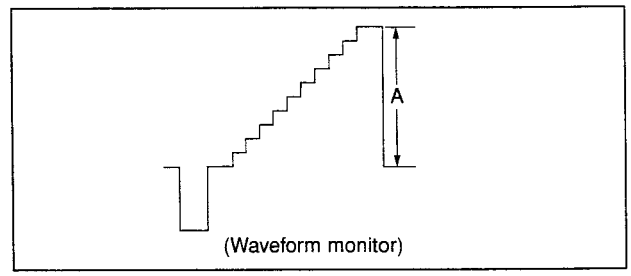
Note

Be sure to turn off the power of CCU before setting the switch.

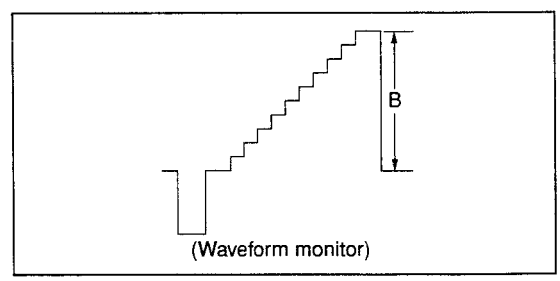
- CABLE COMP buttons (on the front panel of CCU-D50/D50P → L100 (100 m)

Adjustment Procedures

1. Measure the output signal level (A) of the video signal generator and write down it. (At 75-ohm termination)

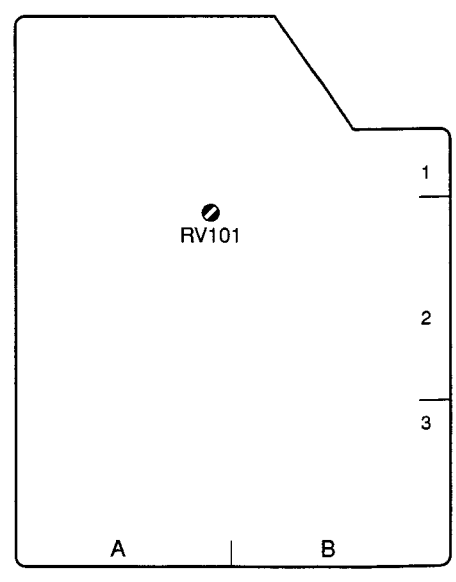


2. Connect the unit and equipment as shown in the connection diagram.
3. Adjust the PROMPT video level.
   Test Point: PROMPT/GENLOCK connector of the CA-D50
   Adjustment Point: ⊘RV101/IF-880
   Specification: B = A ±2 %



Setting after Adjustment

Turn off the power of CCU first, and return the system setting switch 2 on the front panel of CCU-D50/D50P to OFF.

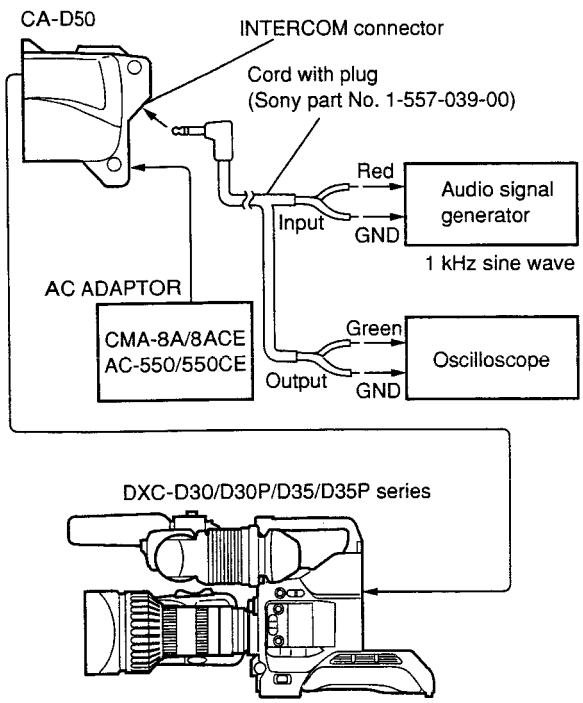


IF-880 board (A SIDE)

2-5. SIDE TONE Adjustment

Equipment: Oscilloscope
Audio signal generator
Video camera DXC-D35/D35P/D35WS/D35WSP or DXC-D30/D30P/D30WS/D30WSP
AC adaptor CMA-8A/8ACE or AC-550/550CE
Cord with plug (Sony part No.: 1-557-039-00)

Connection

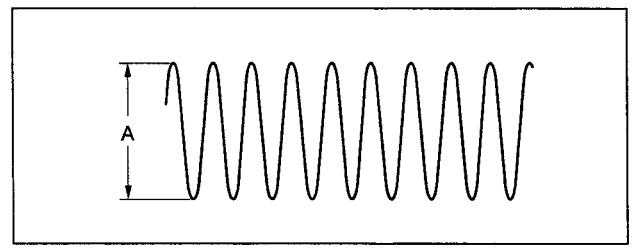


Preparations

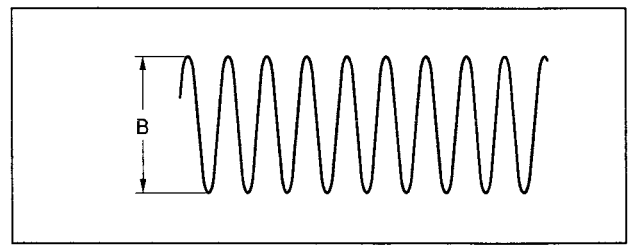
- INTERCOM volume knob (on the rear panel) → Mechanical center
- Output signal/Audio signal generator → 1 kHz sine wave

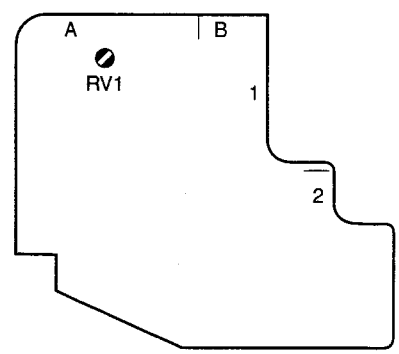
Adjustment Procedures

1. Turn ⊘RV1/AU-286 board fully counterclockwise (↺).
2. Adjust the output level of the audio signal generator.
   Test Point: INTERCOM connector/CA-D50
   Adjustment Point: OUTPUT control/audio signal generator
   Specification: A = 1.0 V p-p



3. Adjust the output level of the INTERCOM connector.
   Test Point: INTERCOM connector/CA-D50
   Adjustment Point: ⊘RV1/AU-286
   Specification: B = 320 ± 20 mV p-p





AU-286 board (A SIDE)